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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/050,087	01/14/2002	Fabrice Monti di Sopra	P-2433	6253

7590
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01/30/2003

EXAMINER

VY, HUNG T

ART UNIT	PAPER NUMBER
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2828

DATE MAILED: 01/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/050,087

Applicant(s)

DI SOPRA ET AL.

Examiner

Hung T Vy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 14 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

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SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

1. In response to the communications dated 01/14/2002, claims 1-38 are pending in this application.

Foreign Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Europe on 17/01/2001.

Specification

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

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4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-38 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, the phrase "two or more VCSEL element" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d). The claim does not recite any method to provide two or more VCSEL element and any element or control circuit for providing VCSEL elements and injecting current in order to provide stabilizing the polarization. The claim further is not clear where this device perform for computer or laser because the claim does not recite any circuit.

Regarding claims 21 and 22, the phrase "polarization-stable VCSEL device" renders the claim indefinite because it is unclear. The claim recites the VCSEL but the claim does not recite the structure of the laser. What is an arrangement of two to five phase-coupled VCSEL elements?

Regarding claim 35, the phrase " a first mirror", " a second mirror" renders the claim indefinite because it is unclear what are the first mirror and second mirror, what figure support for this claim, no structure of laser.

Claims 2-20 and 23-38 depend from rejected claim 1, 21 and 22 thereby render these dependent claims indefinite.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-38 are rejected under 35 U. S. C. § 102 (b) as being anticipated by Thornton, U.S. patent No. 6002,705.

Regarding claim 21-27, Thornton discloses a polarization-stable VCSEL device comprising: an arrangement of four phase-coupled VCSEL elements (See fig 1), wherein, during operation, the polarization of each of the VCSEL elements remains substantially constant (See column 2, column 47-50). A polarization adjusting means provided in one or more of the phase coupled VCSEL element to select a predefined polarization direction (See fig 1). The polarization adjusting means comprises a strain element (132)(See fig 3) to produce an orientation-dependent strain in one or more of the phase-coupled VCSEL elements (See fig 3). Strain element (132) comprises a strain layer including one or more shrunk material layer to create and orientation-depent strain (See column 5, line 56-64). The polarization adjusting means comprises electrodes adapted to allow inhomogeneous injection of current into the VCSEL elements (See fig 1 and fig 2). Electrodes are arranged in accordance with a crystallographic orientation of a substrate on which the VCSEL device is formed (See

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column 4, line 3-21). Electrodes oriented in a first crystallographic direction are electrically insulated from electrodes oriented in a second crystallographic direction are electrically insulated from electrodes from electrodes oriented in a second crystallographic direction (see fig 1).

Regarding claims 28-33, Thornton discloses the polarization-stable VCSEL device, wherein the plurality of phase-coupled VCSEL elements are arranged in an array defined by a grid layer comprising electrically conductive portions (112) (see fig 1). First stripes of the grid layer extend along a first direction and second stripes extend along a second direction whereby a width of the first stripes is less than a width of the second stripes and array is asymmetric (see fig 4).

Regarding claims 34-38, Thornton discloses the polarization-stable VCSEL device, further comprising: a phase-matching layer on top of a DBR (124), the phase-matching layer adjusting a reflectivity difference of the VCSEL resonator area below a radiation window and below a region separating two adjacent VCSEL elements to about .5 to about 3% (See column 5, line 26-32). A width of stripes of the grid layer is in the range of about 7 μm to about 0.1 μm (see column 6, line 1-6).

With respect to claims 1-20, the methods of stabilizing the polarization of vertical surface emitting laser are considered as product by process steps.

Citation of Pertinent References

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6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The patent to Swirhun et al. disclose Liner polarization of Semiconductor Laser, U.S. Patent No. 5,412,680.

The patent to Jewell et al. disclose Polarized surface-emitting Laser, U.S. Patent No. 5,331,654.

The patent to Chua et al. disclose Method and Structure for Eliminating Polarization Instability in Laterally-Oxidized VCSELS, U.S. Patent No. 6,304,588.

The patent to Yoshikawa et al. disclose VCSELS and VCSEL-based devices, U.S. Patent No. 6,154,479.

The patent to Cox et al. disclose Resonant Reflector for Improved Optoelectronic Reflector for improved optoelectronic device performance and Enhanced Applicability, U.S. Patent No. 6,055,262.

Conclusion

7. When responding to the office action, Applicants are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung VY whose telephone number is (703) 605-0759.

The examiner can normally be reached on Monday-Friday 8:30 am - 5:30pm. If



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attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul IP can be reached on (703) 308-3098. The fax numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

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Hung T. Vy
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January 14, 2003.